

BOGNOR URBAN DISTRICT.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

AND

CLIMATOLOGICAL SOCIETY

FOR THE YEAR 1920.

TO THE CHAIRMAN AND MEMBERS OF THE BOGNOR URBAN DISTRICT COUNCIL.

Gentlemen,

I beg to lay before you my 31st Annual Report on the Health and Sanitary Conditions of the Urban District of Bognor for the year ending the 31st December, 1920.

The area of the district is 865 acres. The sea fishing forms the principal industry of the Town and no trade is carried on which could have any prejudicial influence on the public health. For years the locality has been a resort for persons seeking rest and restoration to health. The aspect of Bognor is almost due South; it is sheltered from the North winds by the South Downs. The air is remarkably pure, balmy and bracing, having the mildness of the South and the dryness of the East Coast.

The surface soil is gravelly and very porous, the roads dry very rapidly after the rain. Fogs are rare, and in Summer few days occur without sea breezes tempering the heat and in Winter snow is rarely seen, and when it falls it disappears rapidly. The prevailing wind is South West.

The Sands decline gradually from the Parade, constituting a safe play ground for children. At high tide the sea reaches the parade, thus the foreshore gets washed twice daily.

ESTIMATE OF POPULATION.

The corrected estimate of population I have received from the Registrar General is 8722.

BIRTHS.

The number of Births registered in the District for the year 1920, was 163, namely 90 males and 73 females.

This gives the birth-rate, calculated on the estimate of population as received from the Registrar General, of 18·6 per 1000.

The births were distributed over the 12 months as follows :—

| | Males. | Females. | Total. |
|-----------|--------|----------|--------|
| January | 10 | 7 | 17 |
| February | 10 | 3 | 13 |
| March | 12 | 6 | 18 |
| April | 8 | 7 | 15 |
| May | 11 | 10 | 21 |
| June | 6 | 3 | 9 |
| July | 8 | 9 | 17 |
| August | 3 | 3 | 6 |
| September | 7 | 8 | 15 |
| October | 8 | 10 | 18 |
| November | 4 | 5 | 9 |
| December | 3 | 2 | 5 |
| Totals | 90 | 73 | 163 |

The figures for the previous 5 years are as follows :—

| | Males. | Females. | Total. | Rate. |
|------|--------|----------|--------|-------|
| 1916 | 56 | 62 | 118 | 14·6 |
| 1917 | 63 | 50 | 113 | 12·5 |
| 1918 | 54 | 69 | 123 | 13·2 |
| 1919 | 68 | 53 | 121 | 13·8 |
| 1920 | 90 | 73 | 163 | 18·6 |

Five births of illegitimate children which occurred in the District are included in the number registered.

DEATHS.

The gross number of deaths occurring within the District during the year 1920, was 110 viz :—47 males and 63 females.

These deaths were distributed over the 12 months as follows :—

| | Residents. | | | Non-Residents. | | |
|-----------|------------|----------|----------|----------------|----------|----------|
| | Males. | Females. | Total. | Males. | Females. | Total. |
| January | 4 | 4 | 8 | 1 | 1 | 2 |
| February | 6 | 7 | 13 | 0 | 1 | 1 |
| March | 9 | 7 | 16 | 0 | 1 | 1 |
| April | 2 | 2 | 4 | 2 | 0 | 2 |
| May | 6 | 6 | 12 | 2 | 1 | 3 |
| June | 1 | 5 | 6 | 0 | 0 | 0 |
| July | 0 | 7 | 7 | 1 | 0 | 1 |
| August | 0 | 2 | 2 | 0 | 2 | 2 |
| September | 3 | 5 | 8 | 1 | 0 | 1 |
| October | 6 | 4 | 10 | 0 | 1 | 1 |
| November | 1 | 2 | 3 | 0 | 0 | 0 |
| December | 2 | 4 | 6 | 0 | 1 | 1 |
| | <hr/> 40 | <hr/> 55 | <hr/> 95 | <hr/> 7 | <hr/> 8 | <hr/> 15 |

I have received from the County Medical Officer of Health, the names of 16 Bognor Residents, who died in the Royal West Sussex Hospital, the Work House Infirmary and other places outside the Urban District of Bognor. I have also received the names of 15 visitors, who died within the Urban District of Bognor, whose deaths are transferred to the respective areas where they resided.

In accordance with instructions of the Ministry of Health, the inward transfers are not included in the figures used in arriving at the death rate of the District, but they are included in Table III which deals with deaths at various ages, of residents, whether occurring in or beyond the District, on the other hand the outward transfers are included in the figures used in arriving at the death rate of the District but not included in Table III.

The total number of Deaths and the Death Rates for the previous 10 years are as follows :—

| Year. | Total. | Rate. | Year. | Total. | Rate. |
|-------|--------|-------|-------|--------|-------|
| 1911 | 96 | 11.7 | 1916 | 87 | 11.4 |
| 1912 | 106 | 12.6 | 1917 | 102 | 12.6 |
| 1913 | 102 | 11.8 | 1918 | 116 | 13.9 |
| 1914 | 108 | 12.3 | 1919 | 109 | 12.9 |
| 1915 | 107 | 13.8 | 1920 | 110 | 12.6 |

The estimated Death Rate of the deaths occurring within the District as calculated on the estimate of population, which I have received from the Registrar General, is :—12.6 per 1000.

The various ages at which death occurred during the year under Report were as follows :—

| | |
|--------------------------|-----------|
| Under 1 year | 7 |
| 1 year and under 5 years | 5 |
| 5 years " " 15 " | 4 |
| 15 " " " 25 " | 2 |
| 25 " " " 45 " | 17 |
| 45 " " " 65 " | 23 |
| 65 " " " 80 " | 36 |
| 80 years and over | 16 |
| | <hr/> 110 |

The ages of death of those of over 80 years were as follows :—

| | | |
|---|----|----|
| 2 | at | 80 |
| 5 | " | 81 |
| 3 | " | 82 |
| 1 | " | 83 |
| 2 | " | 84 |
| 1 | " | 85 |
| 2 | " | 86 |

The chief causes of death at various ages will be found in Table III.

During the year, there were, in the District, 7 deaths of infants under 1 year of age, which gives an Infantile Mortality Rate of 0·8 per 1000 general population and 42·9 per 1000 Births registered.

These deaths were confined to the first 5 months of the year and were distributed as follows :—

| | Males. | Females. | Total. |
|----------|---------|----------|---------|
| January | 1 | 0 | 1 |
| February | 3 | 0 | 3 |
| March | 1 | 0 | 1 |
| April | — | — | — |
| May | 2 | 0 | 2 |
| | <hr/> 7 | <hr/> 0 | <hr/> 7 |

INFECTIOUS DISEASES.

Under the Infectious Diseases Notification Act, 1889, adopted by your Council in 1891, I have received 87 notifications, viz :—

| | |
|---------------|----------|
| Diphtheria | 75 |
| Scarlet Fever | 12 |
| | <hr/> 87 |

The above Notifications for 1920 were distributed over the 12 months as follows :—

| | Scarlet Fever. | Diphtheria. |
|-----------|----------------|---------------|
| January | 3 | 16 |
| February | 1 | 18 |
| March | 0 | 8 |
| April | 1 | 9 |
| May | 1 | 5 |
| June | 1 | 5 |
| July | 1 | 3 |
| August | 0 | 4 |
| September | 0 | 1 |
| October | 1 | 0 |
| November | 1 | 6 |
| December | 2 | 0 |
| Total | <hr/> 12 | <hr/> 75 = 87 |

DIPHTHERIA.

The outbreak of diphtheria which during the latter months of 1919 and the early months of 1920, threatened to cause some apprehension, gradually died down during the year under report. There was a slight recrudescence during November but this was followed by a nil return for December. The cases were mostly of a mild type and although 75 cases were notified, there were only 6 deaths from the disease. In all cases after notification of the disease the contacts were swabbed and the "positives" promptly isolated. Diphtheria Anti-toxin, which is supplied free of cost by the Council, was freely used in all clinical cases.

64 cases of Diphtheria and 5 of Scarlet Fever were sent to the Isolation Hospital of which 4 cases of Diphtheria died.

The corrected Death Rate from Zymotic diseases is :—0·6 per 1000 general population.

Totals of all notifiable diseases, notified during the last 10 years were :—

| | | | | | |
|------|-----|----|------|-----|-----|
| 1910 | ... | 46 | 1915 | ... | 44 |
| 1911 | ... | 43 | 1916 | ... | 124 |
| 1912 | ... | 22 | 1917 | ... | 221 |
| 1913 | ... | 17 | 1918 | ... | 62 |
| 1914 | ... | 11 | 1919 | ... | 216 |

The accommodation at the Isolation Hospital provides 12 beds for Scarlet Fever patients namely 6 male and 6 female, and 12 beds for Diphtheria patients, namely 6 male and 6 female.

Disinfection of premises after occupation by patients suffering from notifiable diseases was carried out to the satisfaction of the Sanitary Authority, in all cases.

Under the Public Health (Tuberculosis) Registration Act, 1912, which requires notification of all cases of Tuberculosis and came into force on 1st February, 1913, I have received 16 certificates which are classified thus :—

| | Males. | Females. | Total. |
|---------------|----------|----------|----------|
| Pulmonary | 8 | 4 | 12 |
| Non-Pulmonary | 2 | 2 | 4 |
| | <hr/> 10 | <hr/> 6 | <hr/> 16 |

A dispensary is provided at Chichester for treatment of these cases when necessary. There is no accommodation for them in the Urban District of Bognor.

THE HEALTH VISITOR.

The Nurse who carries out this duty works under the direction of the County Council, and the Bognor District Nursing Association, which also employs the services of two maternity nurses.

All nurses do much useful work in the Town ; and whenever they have occasion to call attention to nuisances or sanitary defects in houses visited by them, these are immediately attended to by the Sanitary Inspector or myself.

MATERNITY AND CHILD WELFARE CENTRE, BOGNOR.

The Bognor Centre was established by, and is under the control of the West Sussex County Council. The County Medical Officer of Health is responsible for its administration.

There is a Committee of Local Ladies who render most valuable assistance.

The Centre was opened on May 31st, 1918, and has made steady and good progress. On December 31st, 1920, there was 197 names on the register with an average weekly attendance of 30.

The Centre is opened every Thursday afternoon at the Parochial Hall, London Road, and is for the supervision of Infants up to school age, and Nursing and expectant mothers. A Local Medical Officer attends on alternate Thursdays to examine the children, and expectant mothers, when presented by midwives,

On the other alternate Thursdays, lectures and demonstrations are given by Nurse Evans on mother craft, and home nursing. Demonstrations are also given on cutting out and making up of infants' garments from old or new material.

The Committee have also started a second hand department, for clothing, etc., which is given by Local Residents. A sale is held about every 6 weeks. The money realised at these sales enables the Committee to give assistance to necessitous cases.

The Centre comprises three departments.

The first is used as a waiting room, and clothing and club department.

This department has proved a great boon to its members in both providing garments at a most reasonable cost, and advising mothers whenever possible in the dressing of Infants and young children, 294 model garments were sold during the year, all of the most serviceable and best material and made by the kind and voluntary help of many local ladies.

2nd department is for the undressing and weighing of infants, a weight card is given for each child, the card being retained by the Mother.

Glaxo, Malt and Oil, Virol, and Lactagol, etc. are sold for the use of infants or mothers as directed by the Medical Officer.

3rd department is the Doctor's consulting room where infants or mothers are examined, complete records are kept by the Doctor up to the age of 5 years, and the records are then handed on to the School Medical Officer at the School clinic.

A complete record is thus kept of each child from birth till it leaves school.

Tea is provided for the Mothers at a very low cost.

Provision is also made for Mothers to be sent to the Brighton Lying in Hospital when necessary.

The County Council have granted 30 milk orders during the year to nursing Mothers and infants when recommended by the Centre Medical Officer.

THE PUBLIC ELEMENTARY SCHOOLS.

These Schools have been closed by order of the County Medical Officer of Health as follows :—

| | |
|--------------------|---|
| Bognor (Infants) | from March 5th to 21st on account of Diphtheria |
| „ (Roman Catholic) | „ „ 8th to 14th „ „ „ Influenza |
| „ (Infants) | „ „ 22nd to end of term „ „ „ Diphtheria |
| „ (Nyewood) | „ „ 29th to „ „ „ Measles |
| „ (Infants) | „ April 13th to May 2nd „ „ „ |
| „ (S. Bersted) | „ May 27th to June 13th „ „ „ |

All the Public Elementary Schools are supplied with Town Water and are in a Sanitary Condition. During the vacations they are thoroughly cleaned and disinfected.

A Special School Medical Officer is appointed by the County Council for the inspection of children in these Schools.

THE WATER SUPPLY.

The water supply of the Town is ample in quantity and still maintains its high standard of purity as shewn by the accompanying report. It is drawn from deep wells at the foot of the Downs about 7 miles distant, where there is a pumping station which fills a covered reservoir on the side of the hill, from which the water falls by gravitation to the Town.

THE LABORATORY,
11, BILLITER SQUARE,
LONDON, E.C. 3.
18th October, 1920.

REPORT ON A SAMPLE OF WATER RECEIVED ON OCTOBER 12TH FROM
F. J. MARTIN, ESQ., ON BEHALF OF THE BOGNOR WATER COMPANY.

The sample was quite clear and, when viewed in a 2-ft. stratum showed the pale blue tint of organically pure water. It was free from odour and had the following composition, expressed in parts per 100,000 :—

| | |
|---|--------------------|
| Chlorine | 2.56 |
| Sulphuric Acid (SO ₃) | 0.67 |
| Nitric Acid (NO ₂ O ₅) | 2.04 |
| Phosphoric Acid | Trace |
| Free Ammonia | 0.0022 |
| Albuminoid Ammonia | 0.0074 |
| Oxygen absorbed from permanganate at 80° F. in 15 mins. | 0.0053 |
| Do. do. in 4 hours. | 0.0158 |
| Total solids dried at 212° F. | 37.40 |
| Loss on Ignition | 2.80 |
| Appearance of solids on heating | No visible change. |
| Hardness—Temporary | 18.5 |
| " Permanent | 5.8 |
| " Total | 24.3 |

BACTERIOSCOPIC EXAMINATION :—

| | |
|---|----|
| Total number of organisms per cubic centimetre | 50 |
| Growing at blood-heat at agar | 3 |
| B. Coli—not detectable in 36 cubic centimetres. | |

The water supply is in a very satisfactory condition. It is of great organic purity, as shown both by chemical analysis and the bacterioscopic examination.

(Signed) HEHNER & GRIMWOOD.
OTTO HEHNER.

THE SALE OF FOOD AND DRUGS ACT.

Under the above Act twenty-six samples of Milk were analysed during the year 1920, by the Public Analyst, of which 23 were genuine and 3 did not comply with the Board of Agriculture Standard, i.e.:—3% fat, 8.5% non-fatty solids.

The average contents of the 26 Samples of New Milk analysed was, as follows :—

| | | |
|-------|-------------------|---------------|
| Fat. | Non-fatty Solids. | Total Solids. |
| 3.57% | 8.95% | 12.52 % |

Table of Samples purchased and analysed by the Public Analyst.

| Description. | RESULT OF ANALYSIS. | | |
|--------------------|---------------------|----|------------|
| | Genuine. | | Otherwise. |
| New Milk | 26 | 23 | 3 |
| Dripping | 1 | 1 | — |
| Pepper | 2 | 2 | — |
| Cream of Tartar | 1 | 1 | — |
| Zinc Ointment | 2 | 2 | — |
| Glycerine | 1 | 1 | — |
| Tincture of Iodine | 1 | 1 | — |
| | 34 | 31 | 3 |

The following were condemned as being unfit for human consumption.

| | | | | |
|---------|-----------|----------|--------|----------------|
| 7 Cows. | 11 Sheep. | 2 Lambs. | 1 Pig. | 210lbs. bacon. |
|---------|-----------|----------|--------|----------------|

The Sanitary Condition of the premises where foods are prepared, stored or exposed for sale is satisfactory.

There are no underground bakehouses in the District.

THE FACTORIES on the Register at the end of the year, under the supervision of the Council are 16 in number and are classified as follows :—

| | | | |
|-------------------|---|---------------|---|
| Steam Laundry | 1 | Machinist | 1 |
| Stone Mason | 1 | Beer Bottling | 1 |
| Forge Contractors | 2 | Motor Works | 7 |
| Printers | 2 | Shoemaker | 1 |
| Total—16. | | | |

In every one of these a copy of the Factory Act is hung in a conspicuous position.

THE WORKSHOPS on the Register at the end of the year were 83 and are classified as follows :—

| | | | |
|---------------------|----|------------------------------|----|
| Bakehouses | 11 | Undertakers & Cabinet Makers | 4 |
| Tailors | 7 | Coach Builders | 1 |
| Carpenters | 11 | Brick Makers | 0 |
| Shoemakers | 8 | Harness Makers | 2 |
| Cycle Manufacturers | 5 | Dressmakers | 16 |
| Plumbers | 6 | Laundries | 4 |
| Horse Farriers | 3 | Watch Makers | 5 |
| Total—83. | | | |

One complaint was dealt with during the year 1920 which was remedied.

Systematic inspections of the District have been made from time to time, or as occasion required, by myself or the Sanitary Inspector. Regular monthly reports of the work have been laid before the Sanitary Committee.

Besides this general supervision I have paid 61 special visits where required.

DAIRIES AND COWSHEDS.

The policy adopted by the Council in 1912 for the proper inspection of the Dairies, Cowsheds, Milk Shops and Slaughter Houses, by a Veterinary Surgeon, has been carried out and his report on the matter is as follows :—

“ I have visited all the dairies and cowsheds supplying milk to the town and am pleased to state that the regulations respecting these are being carried out, and that as regards the health of the animals, there has been no epidemic nor outbreak of any infectious diseases, the “ Tuberculosis Order ” being still not one of the scheduled diseases, under the Contagious Disease of Animals Act, I am unable to compel the destruction of apparently clinical cases of this disease, but on the other hand I have had no trouble in dealing with any of these cases when they arise, for the owners now realise the danger to other animals, by keeping such cases in the herd.

Re the slaughter houses, I have inspected several diseased carcasses and in each case the carcasses being condemned have been destroyed. Personally I attach very great importance to a thorough system of meat inspection for several reasons. Firstly, at the present moment there is not the pre-war system of insurance with the auctioneers of fat stock bought at the markets, therefore any loss, owing to a carcass condemned after slaughter, falls on the purchaser.

Secondly, in many cases carcasses, that are only slightly affected, can be easily dressed to obscure this to any but an expert meat inspector.

And thirdly, owing to the scattered positions of the slaughter houses it is difficult to make a complete inspection of all animals killed, and one has to rely on the butcher notifying any suspicious case after slaughter, at present this system is common in the majority of towns in this Country where public abattoirs do not exist.”

(Signed) JAS. T. ANGWIN, M.R.C.V.S.

Veterinary Inspector.

HOUSING AND TOWN PLANNING.

During the last five years the increase in the number of inhabited houses has been as follows :—

In 1916 there were 2092 Inhabited Houses.

| | | | |
|--------|-----|------|-----|
| " 1917 | " " | 2143 | " " |
| " 1918 | " " | 2149 | " " |
| " 1919 | " " | 2150 | " " |
| " 1920 | " " | 2167 | " " |

The Council has erected seven cottages in Gravits Lane made from an Army Stores Hut. (Emergency Scheme 1). Each Cottage contains 1 large living room, scullery, coals, pantry, w.c., perambulator cupboard, and bath room on the ground floor, and three bedrooms on the first floor. These cottages have made dry airy dwellings and form a very satisfactory block of buildings. Nearly all are occupied by ex-soldiers and their families. Twelve more such cottages are now in course of erection, and are known as Emergency Scheme No. 2.

The Council has entered into a contract for the erection of 54 A Urban No. 3 dwellings on the Geall's Land Estate; these houses, which have the same accommodation as provided in the army hut cottages, will be completed early in 1921.

The Council is proposing to ask for tenders for the erection of 12 houses of the type known as B4 No. 4 (Urban) and 16 B4 No. 5 in Linden Avenue. These houses have a parlour and one bedroom in addition to the accommodation mentioned above. All the above houses are being or will be erected under the Government's Housing Scheme.

The Council has also purchased from the Merchant Taylor's Company the Ladies' Home in Waterloo Square. This will be converted into five houses and three flats and will furnish additional housing accommodation in the middle of the Town.

The general housing conditions in the District are very fair. Many of the smaller dwellings were renovated and much improved under the Housing and Town Planning Act 1909, before the war. There is still, however, a great shortage of houses in the district, as is shown by the fact that the Council received 240 applications for the 54 houses in course of erection.

Over crowding of the existing houses as a consequence of the shortage of houses has been prevalent during the year under report, and until the new houses are ready for occupation, it is impossible to deal effectively with this matter.

Taken as a whole there are not a great number of defects in the houses in the Town. Where present the defects are mostly due to leaky roofs, damp walls (generally caused by defective guttering), defective floors and in a few cases defective drainage.

Landlords are inclined to delay in repairing their property owing to the present excessive cost of materials and labour.

In cases of serious defects coming to the knowledge of the Council, notices are served requiring the owners of the properties to remedy the defects, and in all cases the work has then been carried out to the satisfaction of the Council.

No back to back houses exist in the Town and there are no specially unhealthy areas.

The existing bye-laws relating to houses, &c., are working well, and there does not appear to be any need for new bye-laws or for the revision of the present bye-laws.

HOUSING CONDITIONS.

STATISTICS.

Year ended 31st December, 1920.

1.—General.

| | | | | |
|---|--|---|---|-------|
| 1 | Estimated population | - | - | 8722 |
| 2 | General death-rate | - | - | 12'6 |
| 3 | Death-rate from tuberculosis | - | - | 1'2 |
| 4 | Infantile mortality | - | - | 40'6 |
| 5 | Number of dwelling-houses of all classes | - | - | 2'177 |
| 6 | Number of working-class dwelling-houses | - | - | 1'000 |
| 7 | Number of new working-class houses erected | - | - | 7 |

2.—Unfit Dwelling-Houses.**1.—Inspection.**

| | | | | |
|---|--|---|---|----|
| 1 | Total number of dwelling-houses inspected for housing defects (under Public Health or Housing Acts) | - | - | 22 |
| 2 | Number of dwelling-houses which were inspected and recorded under the Housing (Inspection of District) Regulations, 1910 | - | - | 18 |
| 3 | Number of dwelling-houses found to be in a state so dangerous or injurious to health as to be unfit for human habitation | - | - | 3 |
| 4 | Number of dwelling-houses (exclusive of those referred to under the preceding sub-heading) found not to be in all respects reasonably fit for human habitation | - | - | 2 |

II.—Remedy of Defects without Service of formal Notices.

| | |
|---|----|
| Number of defective dwelling-houses rendered fit in consequence of informal action by the Local Authority or their officers | 17 |
|---|----|

III.—Action under Statutory Powers.*A. Proceedings under section 28 of the Housing, Town Planning, &c., Act, 1919.*

| | | | | |
|---|--|---|---|----|
| 1 | Number of dwelling-houses in respect of which notices were served requiring repairs | - | - | 1 |
| 2 | Number of dwelling-houses which were rendered fit | | | |
| | (a) by owners | - | - | 18 |
| | (b) by Local Authority in default of owners | - | - | — |
| 3 | Number of dwelling-houses in respect of which Closing Orders became operative in pursuance of declarations by owners of intention to close | - | - | — |

B. Proceedings under Public Health Acts.

| | | | | |
|---|--|---|---|---|
| 1 | Number of dwelling-houses in respect of which notices were served requiring defects to be remedied | - | - | 4 |
| 2 | Number of dwelling-houses in which defects were remedied— | | | |
| | (a) by owners | - | - | 4 |
| | (b) by Local Authority in default of owners | - | - | — |

C. *Proceedings under sections 17 and 18 of the Housing, Town Planning, &c., Act, 1909.*

| | | | | |
|---|--|---|---|---|
| 1 | Number of representations made with a view to the making of Closing Orders | - | - | I |
| 2 | Number of dwelling-houses in respect of which Closing Orders were made | - | - | I |
| 3 | Number of dwelling-houses in respect of which Closing Orders were determined, the dwelling-houses having been rendered fit | - | - | — |
| 4 | Number of dwelling-houses in respect of which demolition Orders were made | - | - | — |
| 5 | Number of dwelling-houses demolished in pursuance of Demolition Orders- | - | - | — |

3.—Unhealthy Areas.

Areas represented to the Local authority with a view to Improvement Schemes under (a), Part I., or (b), Part II., of the Act of 1890:—

| | | | | |
|---|---|---|---|-----|
| 1 | Name of area | - | - | nil |
| 2 | Acreage | - | - | nil |
| 3 | Number of working-class houses in area | - | - | nil |
| 4 | Number of working-class persons to be displaced | - | - | nil |
| 4 | Number of houses not complying with the building byelaws erected with consent of Local Authority under section 25 of the Housing, Town Planning, &c., Act, 1919 | - | - | nil |
| 5 | Staff engaged on housing work with, briefly, the duties of each officer | | | |
| | The Surveyor, A Costing Clerk, A Draughtsman, Two Clerk of Works. | | | |

ROADS.

The Roads, of which a great many have tarred surfaces are well made and maintained and reflect great credit on our Surveyor, who has given much thought and care to this work.

The only road which has been constructed during the year is the one on Geall's Land for the Housing Scheme, which has been laid out on the most modern and up-to-date lines. It is 35 feet in width (24 feet of which is for the carriage drive). This will allow of 10-feet 6-inch footpaths on either side, 3-feet of which will be a grass sward on which lime trees will be planted. At the extreme end of the road a circle has been laid out and the houses proposed to be built round this circle will form a very nice crescent on either side. The road is kerbed, channelled, gravelled, sewered and lighted.

Tarred slag has been laid in Chichester Road from the Railway Gates to Middle Bersted which is now one of the best roads in the Town. The road has been considerably widened in places and the corners of other roads leading out of it improved.

The work has been made possible by a grant from the Road Board of nearly £3000.

SCAVENGING.

The scavenging of the streets is still carried on in an efficient manner.

The house refuse is collected from each house twice a week during the months of July, August and September, and once a week during the rest of the year. The refuse is conveyed to the destructor in covered carts and there destroyed. This work is efficiently carried out and very few complaints have been received.

The Destructor has been working since October, 1911, and is very satisfactory. During the year 1920 there have been 3520 loads of refuse burnt; 1500 loads of clinkers and 177 loads of ashes have been used by the Council on the roads and foot-paths.

| | |
|----------------------------|----------------------|
| The sale of ashes realised | 69 15 0 |
| " " clinkers " | 18 0 |
| " " bottles " | 6 7 5½ |
| " " tins " | 1 5 0 |
| making a total of | <hr/> £78 5 5½ <hr/> |

SEWERAGE.

The Town is drained by a system of pipe sewers which convey the sewage to the outfall works at Felpham by gravitation. This has worked satisfactorily during the past year, and although Bognor is a very flat town I have not heard of any cases of flooding. The outfall works are now being enlarged and improved at a cost of about £40,000. Good progress is being made, and it is hoped that the work will be completed next year. The scope of the undertaking may be gathered from the following report:—

SANCTUARY HOUSE,

33, TOTHILL STREET,

WESTMINSTER, S.W.

MARCH 31ST, 1920

TO THE URBAN DISTRICT COUNCIL, BOGNOR.

Gentlemen,

Bognor Sewerage.

In accordance with your instructions I have now the honour to lay before you a Report on the Proposed New Sewage Outfall Works and the improvement of the Sewerage System of the Town.

The first question to which I addressed myself was whether the Council should continue to use the existing point of discharge of sewage into the Sea, or whether it would be desirable to make some radical change in the whole system.

To assist me on this aspect of the problem I had the advantage of seeing the very extensive series of Float Experiments to determine the direction of Tidal Currents which had been taken for the Council by Mr. Robert Alaway and Mr. F. Stephens in 1912.

These float experiments I carefully scrutinized and on the whole I found that they were satisfactory and did not indicate the necessity of moving the point of Outfall. This is an eventuality to be avoided if possible because it would obviously involve a very heavy outlay in remodelling the system of sewers.

The set of the currents is somewhat unusual but I may briefly summarize my conclusions by saying that the discharge of sewage at the point selected off Felpham Sluice Patch can with safety take place for a period extending from one hour before high water to five hours after high water and that this period can without much danger of pollution of the foreshore be extended by one hour in either direction.

Under these circumstances it appears that the proper provision to make is a system by which the sewage under the worst conditions can be stored for six hours each tide and be discharged in a similar period.

It now becomes necessary to determine the population to be provided for and the quantity of sewage which that population will produce.

The system of sewers in the Town is largely what is known as a "separate system" that is one in which the rain-water falling on the surface of Streets and Houses is carried off by pipes and conduits separate from the sewage sewers: the latter have to deal with the actual sewage flowing from the House Drains together with such rain-water as cannot be excluded from the House Drains except by an expenditure which would be prohibitive.

To enable me to come to a conclusion on this subject I examined the estimates made by the late Mr. Stevenson, obtained information from the Surveyor to the Council and from the Water-works Company and also had the views of the Chairman and other Members of the Council and of other Officials.

After a consideration of all the information available I have come to the conclusion that the Scheme should provide for the following:—

| | galls. per head. | galls. |
|---|------------------|---------|
| Resident population 15,000 persons at | 30 | 375,000 |
| Visiting " 30,000 " " | 20 | 600,000 |
| | | <hr/> |
| Total per day | | 975,000 |

or say in round figures one million gallons per day.

With such a dry weather flow of sewage and a six hours storage the capacity of the Tanks should be in the neighbourhood of half a million gallons.

The existing storage consists of:—

| | |
|--------------------------------------|-----------------|
| A Reservoir with a capacity of | 260,000 gals. |
| A Tank Sewer " " " | 62,000 " |
| | <hr/> |
| Total | 322,000 " |

It becomes necessary therefore to provide additional storage capacity of about 200,000 gallons and it is desirable that this extra storage should be provided at a level below the invert of the sewers discharging into it so that until it fills, the sewers always have a free flow.

The position in which any underground Tank should be placed requires great care in selection, especially having regard to the experience which your Council has already had in the Contract with Messrs. Munroe.

From an examination of the borings put down by the Council and by the above mentioned Firm, it appears that the depth of the Clay Subsoil underlying the site of the Outfall Works is greater near the River Rife than it is further to the East and nearer the Sea Wall.

In order to further probe this matter I asked that additional boreholes should be put down at points which I selected on the site and they have confirmed the conclusions drawn from the earlier bores.

In the light of this information I have determined to recommend the location of the Proposed Tank to be at the Western extremity of the embankment surrounding the Existing Reservoir.

The ground at this point still contains a deep stratum of very soft silt but over the clay there is a shell bed and this although pervious to water will probably be much easier to excavate than the running silt above.

The Proposed Tank itself I should recommend to be constructed of concrete and I have given the design of this structure very careful consideration. Besides being watertight it has to withstand the external pressure of liquid mud and to be heavy enough not to float. The design which I have proposed secures these conditions.

The level of the invert of the Existing Tank Sewer forming part of the Bersted Sewer is at 5 feet below Ordnance Datum and the Felpham Sewer will join at about 7-ft. below Datum. The bottom of the Proposed Tank will be at 19 feet below Datum so that until it is filled to a depth of 14 feet the Tank Sewer will have a free outlet. The capacity of the Tank up to this level will be 200,000 gallons. The bottom of the Tank will have a clay foundation.

The Pumping Plant will be placed in Pump Wells forming part of the structure of the Proposed Tank and going down to the same bottom level as the Tank and founded on the clay.

The type of Pump which I should recommend is a form of centrifugal pump known as the "Stereophagus" Pump which is specially designed to deal with unscreened sewage and to cut up any solid matters in the sewage.

The adoption of this type of pump will avoid the necessity of screening which is an undesirable operation, involving constant attention and the removal in carts of the offensive screenings. In a district like Bognor where Visitors are able to approach the Pumping Station, it is important to eliminate as far as practicable any process which can be offensive to the senses of sight and smell.

This type of Pump has been in use for several years and is well tried and I have had experience of them which demonstrates their efficiency. They should be fixed at such level that they will be self-charging and this also enables the pumping lift to be reduced to a minimum as the net lift will always be between water level in the Proposed Tank and that in the Existing Reservoir or when that Reservoir is full between the water level in the Proposed Tank and the level of the Tide.

The Pumps should be electrically driven as this system combines several advantages. The principal of these are that the cost of labour is reduced to a minimum; the Pumps can be automatically started and stopped by floats regulated by the height of sewage in the Tanks; there is an absence of noise: there is no carting of fuel to the Pumping Station and there is an immediate response to a sudden increase of sewage flow due to storm-water.

The Pumps will be three in number and will have vertical spindles carried up to the floor level of the Pump House which will be well above flood level. Electric Motors will be attached direct to the Pump spindles.

The capacity of the Pumps will be as follows:—Two units will be provided each capable of delivering 1,400 gallons per minute and one unit capable of delivering 2,800 gallons per minute. The two smaller units will be used for the ordinary flow of sewage and will be automatically started and stopped by floats capable of adjustment.

The starting gear of the small units will be arranged so that one Pump will start when the sewage reaches the level of the invert of the Tank Sewer and will continue working until the Tank is empty, when it will stop. The second small unit will come into operation if the sewage, owing to rainfall, over-powers the first unit. The large unit will not be started until the Tank Sewer is full.

The two small Pumps will be used alternately as first and second units by adjusting the floats periodically, say at intervals of a month.

The Electric Power will be supplied by the Bognor Gas and Electric Light Co., and arrangements with that Undertaking must be made for a special cable and scale of charges.

The Pumping Station will form part of the Underground Tank structure and will stand over the Pump Wells. The design of the building is simple and my endeavour has been to make it as inconspicuous as possible. It will be of Brick rough-casted with Portland Stone dressings. The buildings is exposed to the spray from the Sea Wall and I therefore suggest that it should have a flat roof and that there should be no windows or other openings in the walls on the sea side.

The interior fittings will be quite simple and will consist of the Electric Motors and Switch Board and an overhead traveller for lifting the pumps and motors.

The New Outfall Pipe should be laid from the bottom of the Existing Sewage Reservoir to the point of discharge. The Tank Sewer will be connected to the Outfall Pipe to act as a By-pass so that in case of a heavy rain-fall occurring at or near low water the sewage and stormwater may be sent direct to sea without pumping. This By-pass will be controlled by a Tidal Valve and a Penstock Valve.

The Pump delivery will be into the Existing Reservoir and this pipe will be controlled by a Tidal Valve. A branch delivery pipe will also be provided from the Pumps direct to the By-pass Sewer. This pipe will also be controlled by a Tidal Valve.

The system of working will be as follows: The sewage will gravitate to the Proposed New Tank and during the period between one hour before low water and one hour before high water the Pumps will deliver into the Existing Reservoir, the outlet valve of which will be closed.

When the Flood Tide reaches the period of discharge, i.e., one hour before high water, the Existing Reservoir Valve will be opened and the Reservoir will automatically discharge. During this period the pumps can deliver direct to the Outfall Pipe until one hour before low water. The Existing Reservoir Valve would then be closed and pumping to Reservoir will be resumed.

A drainage pipe is also provided from the Existing Reservoir to the Proposed Tank by which the Reservoir can if required be emptied back to the Tank. This pipe will only be used on occasions when owing to on-shore winds or other causes the Tide level does not fall sufficiently to empty the Reservoir.

In such circumstances the man in charge would determine by the height of water in the Reservoir at say two hours before low water whether or not he would be able to empty the Reservoir. If not he would drain the Reservoir back to the Proposed Tank and pump the water direct to sea through the branch delivery from the Pumps to the Outfall Pipe.

This system is at once the most economical and the most reliable for providing for all eventualities and ensuring the full capacity of Tankage for use during the holding up period.

There still remains the possibility that during heavy rainfalls there may be occasions when the Tank capacity would be insufficient to hold the full discharge of sewage and rainwater during the ordinary holding up period.

Whenever this occurs it will be necessary for the Pumps to be kept running and discharge to continue through the branch delivery pipe direct to the Outfall Pipe, even if the prescribed hours of delivery are exceeded.

This will be only a very occasional occurrence and having in view the dilution of the sewage and the long distance from the Shore to the point of delivery, I do not think there will be any serious risk of pollution of the foreshore.

Turning now to the question of the improvement of the system of sewers, I have considered very carefully the best method of dealing not only with the existing area of the Urban District but also the area in the Parish of Pagham as far as Aldwick which may possibly be at some future date developed and form part of your area.

There are two alternatives, viz:—to construct a new intercepting sewer at such a level as to gravitate all the sewage from Aldwick to the Proposed New Tank or to lay the sewer at a higher level to deal by gravitation with the existing Urban District and to take the sewage from the area in the Parish of Pagham by pumping.

Levels have been taken and complete schemes worked out on both bases and after comparing these I have decided to recommend the latter alternative.

I have been driven to this conclusion by the additional cost and risk of the deeper sewer and this scheme has the further advantage that it reduces to a minimum the expenditure immediately to be undertaken.

Further it leaves it open to you should you eventually decide to take in part of the Parish of Pagham to make a second Outfall Sewer at or about the position of the existing Outfall at Victoria Avenue, Aldwick, if it can be done with safety without bringing the sewage of the outside area into Bognor at all.

This is a possible solution of the problem and one which can be further investigated when the time comes to make provision for the drainage of the outside district.

Although this latter possibility may be acted upon I should recommend you to make the proposed New Intercepting Sewer large enough to deal with the dry weather flow of the outside district and dilution with rainwater up to three times the dry weather flow as this will not add materially to the cost of the scheme and it leaves it open for you to follow either course when the necessity arises. In any event I should recommend you to discharge the stormwater beyond three times the dry weather flow from the Aldwick area at an Outfall at Victoria Avenue.

When determining the sizes and levels of the new Intercepting Sewer I decided to recommend that you utilize the Bersted Tank Sewer as part of the new system. This sewer is of ample capacity and at the right level to carry all the sewage and its use as a storage sewer will in no way be prejudiced by its use as suggested. It will save the construction of 1,000 feet of new sewer in bad ground.

Commencing then at the Western end of the Sewer I should propose to lay a sewer 30-ins. dia. of concrete tubes surrounded with concrete and to carry it to Gloucester Road and then turning to the South to the Marine Drive which should be followed to the end of Lennox Street where it will join up with the existing sewer.

The sewer in Marine Drive from Lennox Street to West Street is large enough and at a proper level to be retained as a part of the new system. If the Aldwick area is ever added a new sewer will be laid along the Parade for a distance of 315 yards and at that point the Rising Main from the Aldwick area will join up.

Aldwick can be drained from Mill Lane towards Victoria Avenue where a Pumping Station would lift the dry weather flow and up to three times dilution back towards Bognor and the surplus stormwater would be dealt with by an Overflow Sewer to discharge as previously stated at the Southern end of Victoria Avenue where the sewage of that area is now discharged.

In addition it will be necessary to lay new sewers to connect the sewage of Lennox Street, Belmont Street, York Road, Albert Road and Walton Road to the New Intercepting Sewer. I should also recommend an Overflow Sewer from the Tank Sewer into the Aldingbourne Rife.

If these sewers are laid they will in my opinion provide for the requirements of your district and finally dispose of the Sewerage question in the most economical manner.

Finally there comes the important matter of cost and in dealing with that aspect of the problem I need not tell your Council that all estimates at the present time are most difficult to make and that the expenditure will be about three times what it would have been before the War. It is fortunate that you have already purchased the pipes necessary for the Outfall Pipe as this will effect a very substantial saving.

My estimate for the Proposed New Tank, Pumping Station and Pumps and Outfall Pipe is £27,880 and for the New Intercepting and Branch Sewers, £13,500 or in round figures a total of £41,500.

In conclusion I desire to record my appreciation for the assistance rendered by the Officials of the Council and particularly Mr. Bridges, in furnishing me with all the information at their disposal.

I am, Gentlemen,

Your obedient Servant,

(Signed) E. J. SILCOCK,

M. Inst. C.E.

I would draw your attention to the fact that the work of the Public Health Department steadily increases, as year by year Parliament throws greater and more extended responsibilities upon Local Authorities.

I enclose Tables I, II, III and IV, as hitherto required by the Local Government Board. These Tables are not for this year asked for, but for the sake of continuity I have made the entries in the Tables as heretofore.

I take this opportunity of thanking the members of the Sanitary Committee and the Inspector of Nuisances for the courtesy and help they have extended to me during the year.

I beg to remain,

Your obedient Servant,

W. CONWAY COOKE,

Associate of King's College, London.
Fellow of the Royal Institute of Public Health.
Medical Officer of Health.

Bognor,
April, 1920.

TABLE I.

Vital Statistics of the Whole District during 1920 and previous Four Years.

BOGNOR URBAN DISTRICT.

| YEAR. | Population estimated to Middle of each Year. | BIRTHS. | | | TOTAL DEATHS REGISTERED IN THE DISTRICT. | | TRANSFERABLE DEATHS. | | NETT DEATHS BELONGING TO THE DISTRICT. | | | | |
|-------|---|-----------------------------|----------------------|-------|--|-------|---|--|---|-------------------------------------|-----------|------|------|
| | | Un- corrected Number. | Nett. | | Number. | Rate. | of Non- residents registered in the District. | of Resi- dents not registered in the District. | Under 1 Year. | | All ages. | | |
| | | | Corrected Number. | Rate. | | | | | Number | Rate per 1,000 Nett Births | Number | Rate | |
| 1916. | { For Birth Rate. | 8248 | 118 | 121 | 14.6 | | | | | | | | |
| | { For Death Rate. | 7581 | | | | 87 | 11.4 | 11 | 16 | 3 | 24.7 | 92 | 12.0 |
| 1917. | { For Birth Rate. | 8995 | 113 | 115 | 12.5 | | | | | | | | |
| | { For Death Rate. | 8069 | | | | 102 | 12.6 | 15 | 18 | 5 | 43.4 | 105 | 13.0 |
| 1918. | { For Birth Rate. | 9299 | 123 | 123 | 13.2 | | | | | | | | |
| | { For Death Rate. | 8299 | | | | 116 | 13.9 | 16 | 21 | 8 | 65.0 | 121 | 14.5 |
| 1919. | { For Birth Rate. | 8738 | 121 | 122 | 13.9 | | | | | | | | |
| | { For Death Rate. | 8388 | | | | 109 | 12.9 | 15 | 13 | 6 | 49.1 | 107 | 11.5 |
| 1920. | | 8722 | 163 | 172 | 19.7 | 110 | 12.6 | 15 | 16 | 7 | 40.6 | 111 | 12.7 |

TABLE II.

Cases of Infectious Diseases notified during 1920.

BOGNOR URBAN DISTRICT.

| NOTIFIABLE DISEASE. | AT ALL AGES. | TOTAL CASES REMOVED TO ISOLATION HOSPITAL. | |
|------------------------|--------------|--|-----|
| | | | |
| Diphtheria | ... | 75 | 64 |
| Scarlet Fever | ... | 12 | 5 |
| Pulmonary Tuberculosis | ... | 12 | ... |
| Other forms of „ | ... | 4 | ... |
| Totals | ... | 103 | 69 |

The Bognor Isolation Hospital is situated in Sheepwash Lane, within the District, and is provided by the Bognor Urban District Council.

TABLE III.
Deaths registered during the Year 1920 classified by age and cause.
BOGNOR URBAN DISTRICT.

| Causes | Nett Deaths at the subjoined ages of "Residents" whether occurring within or without the District. | | | | | | | | |
|--|--|--------------|--------------------|-----|------|-------|-------|-------|----------------|
| | All Ages | Under 1 year | 1 year and under 2 | 2—5 | 5—15 | 15—25 | 25—45 | 45—65 | 65 and upwards |
| Diphtheria and Croup ... | 6 | ... | 1 | 1 | 4 | ... | ... | ... | ... |
| Influenza ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Phthisis (Pul. Tuberculosis) ... | 10 | ... | ... | ... | ... | ... | 8 | 2 | ... |
| Other Tuberculous Diseases ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Cancer, Malignant Disease ... | 14 | ... | ... | ... | ... | ... | 1 | 7 | 6 |
| Organic Heart Disease ... | 15 | 1 | ... | ... | ... | ... | ... | 2 | 12 |
| Bronchitis ... | 10 | 1 | ... | 2 | ... | ... | 1 | 1 | 5 |
| Pneumonia (All Forms) ... | 3 | ... | ... | ... | ... | ... | ... | 1 | 2 |
| Other Diseases of Respiratory Organs ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Diarrhoea and Enteritis ... | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Appendicitis ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Cirrhosis of Liver ... | 3 | ... | ... | ... | ... | ... | 1 | 1 | 1 |
| Nephritis & Bright's Disease ... | 5 | ... | ... | ... | ... | ... | 2 | ... | 3 |
| Puerperal Fever ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Congenital Debility ... | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Other Defined Diseases ... | 36 | 1 | ... | ... | ... | 1 | 2 | 4 | 28 |
| Totals ... | 111 | 7 | 1 | 3 | 4 | 3 | 16 | 19 | 58 |

TABLE IV.
BOGNOR URBAN DISTRICT.
INFANT MORTALITY.

1920. Nett Deaths from stated causes of Infants under 1 Year of Age.

| Causes | Under 1 Week. | 3-4 Weeks. | Total under 1 Month. | 4 weeks and under 3 months. | 6-9 Months. | Total Deaths under One Year. |
|----------------------|---------------|------------|----------------------|-----------------------------|-------------|------------------------------|
| Convulsions ... | 1 | ... | 1 | ... | ... | 1 |
| Bronchitis ... | ... | ... | ... | 1 | ... | 1 |
| Enteritis ... | ... | 1 | 1 | ... | 1 | 2 |
| Premature Births ... | 1 | 1 | 2 | ... | ... | 2 |
| Other causes ... | 1 | ... | 1 | ... | ... | 1 |
| Totals | 3 | 2 | 5 | 1 | 1 | 7 |

| | | | | | | | |
|--|------------------|------|----|--------|----|-----|-----|
| NETT BIRTHS registered during 1920. | legitimate ... | male | 87 | female | 70 | ... | 172 |
| | illegitimate ... | " | 7 | " | 8 | | |
| | Total | | 94 | | 78 | | |
| NETT DEATHS of Infants under 1 year of age registered during 1920. | legitimate | ... | | | 7 | | |
| | illegitimate | ... | | | 0 | | |
| | Total | | | | 7 | | |

REPORT ON THE CLIMATOLOGY OF BOGNOR during the Year 1920.

MR. CHAIRMAN AND GENTLEMEN,

We have the privilege to lay before you our Report on the Climatology of Bognor during the year 1920 which is the 23rd complete year of our records. There has been no alteration in the number or description of the instruments in use but owing to age some of them need careful examination, comparison with standard instruments, and readjustment, this is particularly the case with our old Maximum Thermometer which shews signs of suffering from displacement of the Zero point probably due to the gradual contraction of the bulb and so making the readings slightly higher than they should be at some parts of the scale. Another circumstance we have reason to regret is that Mr. F. J. Neale having left the neighbourhood we have been unable to include in our tables any details of rainfall at Felpham during the last year: but Mr. Guernonprez of Albert Road, Bognor and Mr. H. Neale of Lidsey have kindly furnished us with their records of rainfall as usual, see Table III.

THE MONTHS.

JANUARY was mild and wet. Air pressure was slightly below the average of the previous 22 years, the adjusted readings of the barometer ranged from 985·6 millibars on the 11th to 1035·7 millibars: on the 16th; for the equivalents of these figures in inches see Table II. A gale from S.W. followed the depression on the 11th. There was no fall of snow but hail fell on the 19th and 29th. Fog was recorded on the 7th, 15th, 16th and 31st. A lunar corona was noted on the 28th and a solar halo rainbow tinted on the 30th followed by rain at night.

FEBRUARY was calm, and warm, with high barometer and less than the average of rain though the relative humidity at 9 a.m. was high. Heavy dew on the 6th and 7th produced 0·3 of a millimeter of water in the rain gauge. Hoar frost occurred on the 9th, 22nd and 23rd. Ground fog on the 14th and a little mist on the 20th. A lunar corona was seen on the 27th; and lightning on the night of the 28th.

MARCH was warm, bright and lacking in the usual amount of wind. Hoar frost was noted on the 4th, 8th and 9th. Fog on the 3rd, 4th and 21st. A lunar halo on the 1st quickly followed by rain. A solar halo on the 27th with a similar result. A little snow and rain fell during a squall about the hour 13 on the 15th. Lightning was seen about hour 4 on the 29th with rain.

From the 16th to 23rd, 8 days, were dry.

APRIL. A wet, windy and warm month though a feeling of chilliness was frequently experienced owing to the winds and high Relative humidity of the air. Although the total amount of sunshine was under the average some was recorded every day; but that of the 17th and 27th consisted of gleams only which did not measure one-tenth of an hour. Soft hail with rain fell at hour 14 on the 4th, and hard hail with rain again in the afternoon of the 5th. A squall with rain and hail occurred at 4.15 in the morning of the 20th followed by thunder and lightning about three-quarters of an hour later: a further fall of rain and hail took place at hour 17.25 on the same day, and a double rain-bow was formed. On the 30th a defective solar halo appeared at hour 13, and a lunar halo at night.

MAY. Unsettled and cold for the season at first; but conditions improved later in the month. Wind was strong almost to gale force from S.W., and W., at first and in the middle of the month; but became very light towards the end. Lightning with rain was observed during the night of the 5th, and thunder was heard during the evening of the 24th. Bright sunshine was fitful, two days the 17th and 27th were without, and the 6th had only a gleam. 6 days, 19th to 24th were dry.

JUNE on the whole was decidedly cool. The first 8 days were fine and dry followed by four days having rain mostly during the night time, and a thunder storm in the afternoon of the 12th; then five days without an appreciable quantity of rain next came three of unsettled weather with rain, and thunder on the 19th and a thoroughly wet day on the 20th; then came another five days of fine and dry weather; the remainder of the month was dull, with three rain days. Only two days were sunless, the 20th and 29th.

JULY was a month of small differences from day to day both in air pressure and temperature; the means of both were under the average for Bognor, the temperature being also below the normal for this District, the defect being due to the low shade maximum of the days though the minimum of the nights was about the normal; the mean range from Min. to Max. was less than that of any other month of the year except December in consequence. The 4-ft. sub-soil temperature reached the critical point of 56 degrees F., 286.3 A on the 17th of the month and rose to 56.8 F. or 286.8 A on the 25th at which degree it remained to the end of the month. The most noticeable feature of July was the abundance of rain the total quantity being considerably in excess of our average and also of the District normal: the number of "rain days" were not very much in excess but heavy falls of nearly an inch on the 4th and 5th and of more than an inch on the 21st raised the total above the normal. Bright sunshine was unduly diminished. Thunder storms occurred on the 4th and 11th, and thunder was heard on the 27th. There were no dry spells of more than four days.

AUGUST was also a very cool month but with rather less than the average quantity of rain and lacking in its due amount of sunshine though only one day was entirely overcast throughout. The 4-ft. subsoil temperature increased from 56.8 F. at the beginning to 57.2 F. in the middle and declined to 56.9 F. towards the end of the month. Visibility was very marked on the 18th but the day was overcast and rain with lightning occurred at night. There was a period of 12 days of dry weather, from the 6th to the 17th inclusive; and of 8 days from the 24th to the end of the month.

SEPTEMBER. The adjusted readings of the barometer at hour 9 were mostly above 30 inches being under that on nine mornings only. The mean temperature was about the average, and there were no ground frosts. The 4-ft. subsoil temperature remained very steady, falling only three-tenths of a degree from 56.9 F. to the end of the month. Rainfall although above the average was almost wholly confined to the second half of the month, the 2nd having only 2.1 min. or .083 of an inch followed by 13 dry days; then came a wet and stormy week with a rainfall of 55.6 min. or 2.19-ins: four dry days succeeded, and five damp days ended the month. Solar halos were noted in the afternoon of the 10th and all day on the 11th and a partial one on the 19th. Lightning was seen on the 16th, 20th, 21st and 22nd, and thunder was heard during the afternoon of the 16th also. There was a little damp fog during the early hours of the 27th and 28th. Bright sunshine though well distributed over the month was lacking in amount.

OCTOBER on the whole was warm, dry and fine. Air pressure was fairly high with strong wind from S.W. to S.E. at first and great relative humidity. The rainfall was distributed over the first five days and thunder was heard about hour 20.50 on the 1st; from the 6th to the 13th inclusive there was practically none; but on the 14th rain with lightning was reported in the evening; and rain, hail and thunder were noted in the afternoon of the 15th. Rainbows were formed in the evening of the 1st and morning of the 2nd. The rain during the three days, 14th, 15th and 16th measured 33 millimetres or 1.3 inch: the ensuing 14 days were dry; but the 31st had a downpour of over half an inch. Mean temperature was above the normal; that of the 4-ft. subsoil declined to 56 degs. on the 23rd and to 54.9 on the 31st. Bright sunshine was abundant and well over the average.

NOVEMBER. A fine and dry month although the relative humidity was above the normal. Temperature was rather variable: highest about the middle and falling off during the third week, but recovering itself later. Air pressure remained high after the 1st being below 30 inches on 9 days only throughout the month. Wind was from a northerly direction up to the 11th, then S.W. for 4 days and variable afterwards; and not of great force at anytime: it was practically calm on the 5th, 8th and 9th and so made a little fog possible. Hoar frost was formed on the 22nd and 23rd. A lunar corona was observed on the 28th. There was a little rain on the first two days followed by a dry spell of 9 days, then 5 days with rain and 7 more dry, and another 7 days to the end of the month with rain: the total quantity was below the average. Bright sunshine was well distributed only 7 days being devoid of any; the daily mean of 2.97 hours was about the same as that prevailing along the English Channel.

DECEMBER. The air pressure was above 30-ins: during the first half of the month except the 2nd and 3rd: and was below 30-ins: during the second half. Mean temperature was under the normal the first half and above the normal latter half; especially during the last 8 or 9 days when the mean temperature was 47.6 degs. F. and the last week 49.1 F. which is 9 degrees above the normal of our Meteorological District. As may be seen by the annexed Table III the total rainfall was a little over the average. A spell of dry weather which began on the 8th was broken into on the 11th by a heavy fall of snow which produced 14.9 millimeters or 0.587 of an inch of water: this snow remained on the ground during the following 6 days during which there was no more precipitation except a few flakes of snow on the 12th and 16th. After the 16th there was rain to the end of the year except on Christmas day which was dry and warm though devoid of bright sunshine.

A rainbow was formed on the 1st, a lunar halo on the 22nd and a little fog on the 29th.

H. C. L. MORRIS, M.D., F.R. Met. Soc.
A. G. THOMPSON, C.E., F.R. Met. Soc.

TABLE I.

| Air Pressure at 9 a.m. | | | | | | | Wind. | | | | | | | | | |
|------------------------|--|--|---------------------------|-------|--------------------------|---------|---|------|----|------|----|------|----|------|-------|--|
| 1920. | Barometer reduced to 32° and Mean-Sea level + gravity at Lat. 45°. | Difference from Average of 22 years 1898-1919. | Highest adjusted reading. | Date. | Lowest adjusted reading. | Date. | Number of times observed to be blowing from | | | | | | | | CALM. | |
| | | | | | | | N. | N.E. | E. | S.E. | S. | S.W. | W. | N.W. | | |
| | Ins. | In. | Ins. | | Ins. | | | | | | | | | | | |
| January. | 29·978 | —0·080 | 30·586 | 16th | 29·104 | 11th | 0 | 4 | 2 | 0 | 2 | 12 | 5 | 6 | 0 | |
| February. | 30·265 | + ·228 | 30·703 | 5th | 29·856 | 20th | 0 | 4 | 6 | 4 | 0 | 9 | 6 | 0 | 0 | |
| March. | 29·992 | + ·119 | 30·729 | 3rd | 28·916 | 15th | 1 | 2 | 2 | 4 | 2 | 10 | 6 | 4 | 0 | |
| April. | 29·767 | — ·171 | 30·309 | 24th | 29·198 | 13th | 1 | 4 | 1 | 1 | 1 | 12 | 2 | 8 | 0 | |
| May. | 30·099 | + ·122 | 30·695 | 5th | 29·505 | 2nd | 0 | 0 | 3 | 6 | 0 | 14 | 6 | 2 | 0 | |
| June. | 30·076 | + ·058 | 30·391 | 1st | 29·775 | 11th | 2 | 4 | 2 | 3 | 4 | 8 | 3 | 4 | 0 | |
| July. | 29·966 | — ·055 | 30·356 | 20th | 29·616 | 26th | 2 | 1 | 0 | 1 | 3 | 18 | 3 | 3 | 0 | |
| August. | 30·135 | + ·148 | 30·491 | 29th | 29·558 | 5th | 6 | 4 | 5 | 1 | 1 | 5 | 3 | 6 | 0 | |
| September. | 30·073 | + ·024 | 30·360 | 11th | 29·501 | 18th | 3 | 6 | 7 | 0 | 1 | 4 | 5 | 4 | 0 | |
| October. | 29·974 | + ·030 | 30·320 | 26th | 29·454 | 31st | 0 | 12 | 8 | 4 | 3 | 3 | 0 | 1 | 0 | |
| November. | 30·132 | + ·178 | 30·553 | 9th | 29·313 | 1st | 5 | 7 | 3 | 4 | 2 | 6 | 1 | 2 | 0 | |
| December. | 30·032 | + ·129 | 30·430 | 16th | 29·493 | 22nd | 4 | 12 | 1 | 1 | 2 | 6 | 4 | 1 | 0 | |
| Average for the year. | 30·041 | + 0·069 | | | | Totals. | 24 | 60 | 40 | 29 | 21 | 107 | 44 | 41 | 0 | |

TABLE II.

| Average Temperature in Shade F. Degrees. | | | | | | | | | | | |
|--|---------------|---------------|---------------|--|-------------|--|-----------------------|-----------------------|-----------------------|-----------------------|--|
| 1920. | Mean Maximum. | Mean Minimum. | Average Mean. | Difference from average of 32 years 1898-1919. | Mean Range. | Date. Greatest range from min. to max. | Maximum. | | Minimum. | | Sub- soil. Average temper- ature 4 ft. below grass at 9 a.m. |
| | | | | | | | Highest. | Lowest. | Lowest. | Highest. | |
| | | | | | | | Temperature. Date. | Temperature. Date. | Temperature. Date. | Temperature. Date. | |
| January | 47.3 | 37.6 | 42.5 | +1.5 | 9.7 | 27.5 on 7th | 52.0 on 13th | 35.4 on 6th | 21.3 on 7th | 47.0 on 18th | 46.8 |
| February | 48.4 | 40.1 | 44.3 | +3.5 | 8.3 | 17.0, 9th | 53.0, 19th | 42.0, 21st | 31.0, 9th | 45.9, 18th | 46.6 |
| March | 50.8 | 40.2 | 45.5 | +3.0 | 10.6 | 19.9, 4th | 56.8, 17th | 41.3, 8th | 28.6, 9th | 49.6, 30th | 46.8 |
| April | 53.0 | 44.7 | 48.9 | +2.2 | 8.3 | 15.0, 30th | 58.2, 25th | 48.3, 1st | 38.0, 30th | 49.9, 11th | 48.6 |
| May | 59.4 | 48.5 | 53.9 | +0.9 | 10.9 | 24.0, 23rd | 70.5, 23rd | 52.3, 8th | 36.1, 5th | 58.8, 25th | 50.4 |
| June | 64.1 | 52.1 | 58.1 | +0.8 | 12.0 | 21.6, 2nd | 73.6, 2nd | 58.5, 8th | 43.0, 9th | 58.4, 29th | 53.6 |
| July | 63.5 | 54.0 | 58.8 | -2.2 | 9.5 | 18.5, 19th | 67.7, 29th | 58.2, 5th | 47.0, 25th | 60.2, 17th | 56.1 |
| August | 64.6 | 51.4 | 58.0 | -3.5 | 13.2 | 21.2, 14th | 72.8, 14th | 59.5, 23rd | 42.1, 20th | 58.1, 15th | 57.0 |
| September | 63.5 | 51.6 | 57.5 | -0.3 | 11.9 | 22.1, 13th | 70.5, 5th | 56.4, 21st | 44.9, 13th | 59.8, 6th | 56.8 |
| October | 59.2 | 49.1 | 54.2 | +1.9 | 10.1 | 19.9, 9th | 73.3, 9th | 53.1, 18th | 39.1, 18th | 58.0, 4th | 56.3 |
| November | 51.3 | 40.8 | 46.1 | +0.5 | 10.5 | 18.7, 24th | 56.8, 15th | 44.8, 23rd | 32.2, 5th | 51.6, 15th | 52.9 |
| December | 45.1 | 37.4 | 41.3 | -1.7 | 7.7 | 13.2, 9th | 54.5, 3rd | 31.8, 15th | 25.4, 12th | 48.0, 30th | 49.5 |
| Average for the year | 55.9 | 45.6 | 50.8 | +0.6 | 10.2 | | | | | | 51.8 |
| | | | | | | | | | | | 41.7 |
| | | | | | | | | | | | Total 13 |
| | | | | | | | | | | | Total 41 |

* Mean of 29 days.

† " " 30 "

TABLE III.

| 1920. | Humidity. | | | Rainfall. Waterloo Square. | | | | | | Benson. Albert Road. | | | | Lidsey. | | | | | | | | |
|----------------------------|----------------------------------|-----------|-----------------|----------------------------|--|-------------------|----------------------------|-----|--|---|-------------------|------------|----------------------------|---------|--|--|-------------|-----|----------------------------|--|--|--|
| | Average Temperature of 9 a.m. of | | Taper pressure. | Monthly Totals. | Difference from average of 22 years 1898-1919. | | Greatest fall in 24 hours. | | Number of days with $\geq .01$ inch or more. | Number of days with $\geq .04$ in. or 1 m.m. or more. | Total rain. | | Greatest fall in 24 hours. | | Number of days with $\geq .01$ inch or more. | Number of days with $\geq .04$ inch or more. | Total rain. | | Greatest fall in 24 hours. | | No of days with $\geq .01$ inch or more. | Number of days with $\geq .04$ inch or more. |
| | Dry Bulb. | Wet Bulb. | | | | | | | | | | | | | | | | | | | | |
| January | 42.5 | 40.9 | Inch. 0.213 | Ins. 3.80 | Ins. + 1.48 | Ins. 0.99 on 10th | Date. 10th | 23 | 13 | Ins. 3.66 | Ins. 0.87 on 10th | Date. 10th | 24 | 15 | Ins. 3.40 | Ins. 0.59 on 29th | Date. 29th | 21 | | | | |
| February | 46.7 | 42.8 | .256 | 0.60 | — 1.60 | .19 " | 10th | 14 | 4 | .72 | .19 " | 4th | 11 | 7 | .57 | .20 " | 10th | 10 | | | | |
| March | 46.2 | 44.2 | .271 | 2.30 | + 0.18 | .60 " | 14th | 18 | 13 | 2.35 | .55 " | 14th | 17 | 14 | 2.29 | .60 " | 14th | 16 | | | | |
| April | 49.7 | 47.0 | .291 | 2.69 | + 1.14 | .38 " | 19th | 23 | 15 | 2.72 | .33 " | 19th | 24 | 14 | 2.17 | .46 " | 18th | 17 | | | | |
| May | 55.6 | 51.8 | .313 | 1.26 | — 0.42 | .36 " | 6th | 13 | 9 | 1.30 | .35 " | 6th | 11 | 9 | 1.11 | .32 " | 6th | 11 | | | | |
| June | 59.7 | 55.9 | .401 | 1.87 | + 0.19 | .75 " | 20th | 10 | 6 | 1.84 | .70 " | 20th | 9 | 8 | 1.77 | .94 " | 20th | 6 | | | | |
| July | 60.1 | 56.8 | .418 | 4.97 | + 3.54 | 1.66 " | 21st | 16 | 14 | 4.96 | 1.12 " | 4th | 15 | 12 | 4.57 | .84 " | 21st | 17 | | | | |
| August | 59.3 | 54.8 | .373 | 1.31 | — 0.45 | .63 " | 18th | 6 | 5 | 1.18 | .68 " | 18th | 6 | 5 | 1.09 | .65 " | 18th | 5 | | | | |
| September | 58.1 | 55.1 | .398 | 2.54 | + 0.74 | .79 " | 12th | 12 | 9 | 2.69 | .82 " | 12th | 10 | 9 | 2.54 | .88 " | 12th | 10 | | | | |
| October | 54.3 | 51.8 | .360 | 2.85 | — 0.33 | .91 " | 12th | 8 | 7 | 2.85 | .84 " | 12th | 10 | 7 | 2.78 | .61 " | 12th | 9 | | | | |
| November | 46.9 | 44.2 | .277 | 1.40 | — 1.53 | .46 " | 14th | 12 | 8 | 1.23 | .47 " | 14th | 8 | 7 | 1.33 | .31 " | 29th | 9 | | | | |
| December | 41.2 | 39.8 | .237 | 3.49 | + 0.17 | .59 " | 11th | 22 | 16 | 3.14 | .58 " | 11th | 18 | 14 | 3.31 | .59 " | 29th | 14 | | | | |
| Year's Average. Totals. | 51.46 | 48.8 | 0.322 | 29.17 | + 2.46 | | | 177 | 119 | 28.63 | | | 163 | 121 | 27.23 | | | 145 | | | | |

TABLE IV.

| 1920. | Bright Sunshine. | | | | | |
|-----------|-------------------------|---|---|---|-----------------|--------|
| | Totals. | <i>Difference from Average of 22 years 1898-1919.</i> | <i>Percentage of possible amount.</i> | <i>Number of Sun-recorded days.</i> | Brightest Days. | |
| | | | | | Date. | Hours. |
| | <i>Hours.</i> | <i>Hours.</i> | | | | |
| January | 59.4 | — 7.8 | $\frac{\circ}{22.6}$ | 16 | 14th | 7.2 |
| February | 85.7 | — 7.7 | 29.2 | 20 | 23rd | 9.4 |
| March | 154.4 | + 19.3 | 41.8 | 30 | 31st | 11.8 |
| April | 119.6 | — 70.3 | 28.8 | 28 | 30th | 11.8 |
| May | 227.3 | — 3.5 | 47.3 | 28 | 23rd | 14.5 |
| June | 228.5 | + 0.9 | 46.6 | 28 | 17th | 13.8 |
| July | 156.8 | — 78.9 | 31.8 | 27 | 14th | 13.9 |
| August | 193.5 | — 30.5 | 43.2 | 29 | 16th | 12.5 |
| September | 113.3 | — 73.8 | 30.0 | 25 | 12th | 9.4 |
| October | 148.9 | + 28.7 | 45.0 | 27 | 26th | 9.4 |
| November | 89.0 | + 6.0 | 33.3 | 23 | 17th | 8.1 |
| December | 45.6 | — 9.8 | 18.4 | 17 | 22nd | 6.4 |
| Totals. | 1622.0 | — 227.4 | 36.3 | 298 | | |

